

Application No.: 10/713,840
Group Art Unit: 2655

Attorney Docket No: 1999-0679A-CON

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of generating morphemes from received speech, the method comprising:
 selecting candidate sub-morphemes from the received speech;
 selecting salient sub-morphemes from the candidate sub-morphemes based on salience measurements; and
 clustering the salient sub-morphemes ~~based on similar characteristics~~ into morphemes based on using a combination of distortion measures.
2. (Currently Amended) The method of claim 1, wherein the generated morphemes are one of acoustic ~~and or~~ non-acoustic morphemes.
3. (Currently Amended) The method of claim 1, ~~wherein the similar characteristics used to cluster the salient sub-morphemes are semantic and syntactic similarities~~ further comprising representing the clustered morphemes as finite state machines.
4. (Original) The method of claim 1, wherein the generated morphemes are used by a speech recognition and understanding system.
5. (Original) The method of claim 1, wherein the received speech is training speech.

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6. (Currently Amended) The method of claim 5, wherein ~~the step of~~ selecting candidate sub-morphemes further comprises:

filtering the training speech;

selecting all observed phone sequences of a predetermined length; and

selecting as candidate sub-morphemes the phone sequences that are of at least the predetermined length.

7. (Currently Amended) The method of claim [[4]] 5, wherein the training speech comprises at least one of verbal and non-verbal speech.

8. (Currently Amended) The method of claim 7, wherein the non-verbal speech comprises the use of at least one of gestures, body movements, head movements, non-responses, text, keyboard entries, keypad entries, mouse clicks, DTMP codes, pointers, stylus, cable set-top box entries, graphical user interface entries ~~and or~~ or touchscreen entries.

9. (Original) The method of claim 1, wherein the speech includes multimodal forms.

10. (Currently Amended) The method of claim 1, wherein the speech is one of transcribed ~~and or~~ or untranscribed.

11. (Original) The method of claim 1, wherein the salient sub-morphemes are selected using a test for significance.

12. (Currently Amended) The method of claim 1, wherein the salient sub-morphemes are clustered into morphemes using at least one of a string distortion measure or a semantic distortion measure between the salient sub-morphemes.

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13. (Currently Amended) A computer-readable medium storing a database of morphemes generated from received speech, the database generated according to a method comprising:

selecting candidate sub-morphemes from the received speech;

selecting salient sub-morphemes from the candidate sub-morphemes based on salience measurements; and

clustering the salient sub-morphemes ~~based on similar characteristics~~ into morphemes based on using a combination of distortion measures.

14. (Currently Amended) The computer-readable medium of claim 13, wherein the generated morphemes are one of acoustic ~~and~~ or non-acoustic morphemes.

15. (Currently Amended) The computer-readable medium of claim 13, wherein the ~~similar characteristics used to cluster the salient sub-morphemes are semantic and syntactic similarities~~ method further comprises representing the clustered morphemes as finite state machines.

16. (Original) The computer-readable medium of claim 13, wherein the generated morphemes are used by a speech recognition and understanding system.

17. (Currently Amended) A natural spoken language system having a speech recognition and speech understanding modules, the natural language system using morphemes generated by a method comprising:

selecting candidate sub-morphemes from received speech;

selecting salient sub-morphemes from the candidate sub-morphemes based on salience measurements; and

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clustering the salient sub-morphemes ~~based on similar characteristics~~ into
morphemes based on using a combination of distortion measures.

18. (Currently Amended) The natural language system of claim 17, wherein the
morphemes are one of acoustic ~~and~~ or non-acoustic morphemes.

19. (Original) The natural language system of claim 17, wherein the received speech is
training speech that includes at least one multimodal component.

20. (Original) The natural language system of claim 19, wherein the at least one
multimodal component comprises one of gestures, body movements, head movements, non-
responses, text, keyboard entries, keypad entries, mouse clicks, DTMF codes, pointers,
stylus, cable set-top box entries, graphical user interface entries and touchscreen entries.

21. (New) The method of claim 1, wherein selecting candidate sub-morphemes from
received speech further comprises:

using an automatic speech recognizer having a phonotactic language model.

22. (New) The computer-readable medium of claim 13, wherein the method further
comprises:

using an automatic speech recognizer having a phonotactic language model.

23. (New) The natural spoken language system of claim 17, wherein selecting candidate
sub-morphemes from received speech further comprises:

using an automatic speech recognizer having a phonotactic language model.